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TWO NEW *ELEUTHERODACTYLUS* FROM WESTERN  
MEXICO (AMPHIBIA; LEPTODACTYLIDAE)

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One of the most abundant and conspicuous elements of the American tropics is the frog genus *Eleutherodactylus*. More than 300 species are known ranging throughout the West Indies, Middle America and South America. Within so large a genus, numerous species groups are known but as yet no subgeneric units have been diagnosed. In México and northern Central America one finds eight species groups. Some of these are lower Central American or South American groups that have invaded México but a few are autochthonous elements of southern México and Guatemala.

One of these autochthonous elements is the spatulate-toed *alfredi* group containing 13 taxa, two new species of which are described below.

This species group has previously been known only from the Caribbean Slopes of México and Guatemala and on the semi-arid Yucatán Peninsula (Lynch, 1965). The two new species are from localities in the cloud forests on the Pacific versant of México.

In the course of investigations on the avifauna of a cloud forest in the Isthmus of Tehuantepec, México, a field party from Louisiana State University Museum of Zoology (LSUMZ) found a specimen of a new species of the *alfredi* group. The frog is related to *E. decoratus* Taylor and *E. guerreroensis* sp. n. (described below).

***Eleutherodactylus silvicola* new species**

*Holotype*: LSUMZ 7557, 12 mi. NNE Zanatepec, Oaxaca, México, 4900 ft elevation; L. C. Binford collector, 9 April 1964.

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FIG. 1. *Eleutherodactylus silvicola*, holotype LSUMZ 7557, 12 air miles NNE Zanatepec, Oaxaca, México, 1500 m, actual length 40.2 mm.

*Diagnosis:* A species of the *alfredi* group of *Eleutherodactylus* distinguished by: dorsum and legs without a bold contrasting pattern; tympanum moderate-sized; toes lacking webbing; skin of venter areolate; first finger shorter than second; vertical dark bars on flanks; dark bands on legs separated by light interspaces of equal width; size moderate (40 mm).

*Description of holotype:* (Fig. 1) Snout rounded in dorsal view; head as wide as body; head only slightly broader than long; interorbital distance slightly greater than width of upper eyelid; canthus rostralis



FIG. 2. *Eleutherodactylus guerreroensis*, holotype KU 86873, 3 km N Agua del Obispo, Guerrero, México, 980 m, actual length 39.6 mm.

sharp, area between greatly constricted; loreal region very concave, sloping gradually to lips; in lateral view (Fig. 4) snout truncate; tympanum moderate-sized, higher than long, separated from eye by distance almost as great as length of tympanum; supra and posttympanic fold poorly developed, darkened; nostrils set back from tip of snout; skin of head and dorsum shagreened, that of venter areolate; tongue large, fleshy, notched behind, posterior edge free; choanae well within borders of lip; vomerine dentigerous processes slightly larger than choanae, closely juxtaposed, oval, four and five teeth on right and left processes respectively.

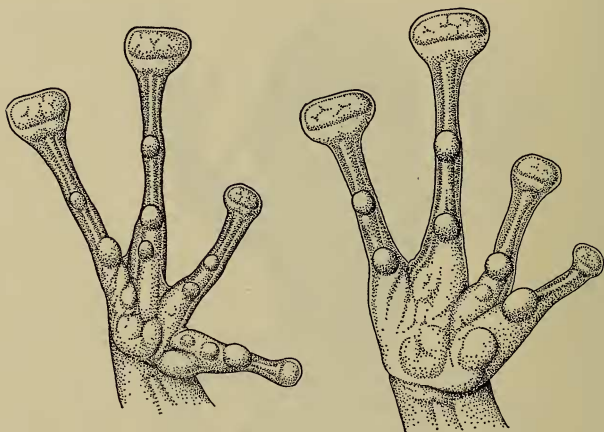


FIG. 3. Hands of *E. guerreroensis* (left) and *E. silvicola* (right).

Row of flat tubercles on forearm; three palmar tubercles, outer difficult to see; supernumerary tubercles absent on palm; subarticular tubercles simple, large, flat; finger tips greatly expanded; fingers long and slender; first finger shorter than second; faint tarsal fold for length of tarsus; tarsus lacking folds or tubercles; inner metatarsal tubercle oval, six times size of small, round, conical, outer metatarsal tubercle; toes lacking web; supernumerary tubercles few in number on sole; toes lacking lateral fringes; tips of toes twice as wide as digit; four dark bands on thigh, four on tibia, two on tarsi, two on forearm; all dark bands equal in width to light interspace bands; dorsum with numerous irregular blotches; four labial bands.

*Color in alcohol:* The dorsum and flanks are gray to cream, the markings dark brown. The venter is immaculate.

*Measurements (in mm):* Snout-vent 40.2; tibia 22.5; head width 17.0; head length 16.1; interorbital distance 4.2; eyelid width 4.2; length of eye 5.1; tympanum length 3.0.

*Comparisons:* *E. silvicola* can be separated from the other members of the *alfredi* group by its drab coloration, large tympanum, the areolate skin of the venter, and vertical barring on the flanks. Most likely to be confused with this species are *E. decoratus* (two subspecies) and *E. guerreroensis*.

*Remarks:* The specimen, an adult female, is full of large yellowish eggs indicating that the species probably lays its eggs in late April or May.

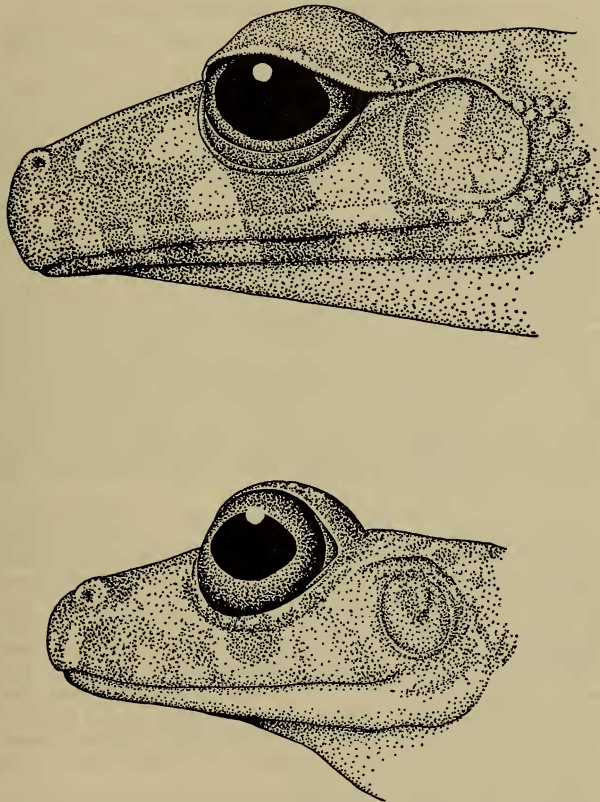


FIG. 4. Side of head of *E. guerreroensis* (top) and *E. silvicola* (bottom).

*Habitat:* The only known specimen was taken in the cloud forest above Zanatepec, Oaxaca, at 4900 ft.

Field work by the University of Kansas in the relatively well-collected Chilpancingo region of Guerrero during July, 1964, resulted in the collection of three specimens of an undescribed species of spatulate-toed *Eleutherodactylus* allied to *E. silvicola* and *E. decoratus*. The new form is more closely allied to *E. silvicola* and probably restricted to the Sierra Madre del Sur of Guerrero.

***Eleutherodactylus guerreroensis* new species**

*Holotype*: KU 86873, 3 km N Agua del Obispo, Guerrero, México, 980 m, collector J. S. Waddick, 8 June 1964.

*Diagnosis*: An occidental species of the *alfredi* group of *Eleutherodactylus* distinguished by: weak tarsal fold for length of tarsus; vocal slits in males; tympanum of males large, three-fourths diameter of eye; adult males to 40 mm snout-vent length; fingers long and thin; lateral bars absent on flanks; supernumerary tubercles absent on sole; thighs and shanks with wide dark bands; skin of venter smooth.

*Description*: (Fig. 2) Head as broad as body, broader than long; snout subacuminate in dorsal view; eyelid width greater than interorbital distance; tympanum large, circular, edges slightly elevated; supra- and posttympanic fold well defined, ending at posterior edge of tympanum; tympanum close to eye, almost reaching lip border; canthus rostralis moderately sharp; loreal region concave, sloping gently to lip; nostril at tip of snout; snout long, truncate in lateral profile; tongue small, fleshy, not notched behind, free for posterior one-fourth; vocal slits in floor of mouth from angle of jaws to below tongue; vomerine dentigerous processes oval, between choanae, 2-5 teeth on each process; choanae large, not hidden by edge of lip, oval, closest anteriorly, about three times size of one dentigerous process; skin of head, dorsum and flanks shagreened, that of venter smooth.

Forearm lacking row of tubercles; three palmar tubercles, supernumerary tubercles absent or few in number on palm; subarticular tubercles small, non-conical, simple; finger pads wide, five to six times width of narrowest part of digit, each pad with a transverse groove across tip; fingers free of web, long and slender; two broad dark bands on forearms with narrow interspace dark bands dividing the light interspaces; anal region granular; dorsum with diffuse blotches; flanks lacking pattern; venter immaculate; thighs and tibia with wide, dark bands; outer tarsal fold or tubercles absent, a faint inner tarsal fold; inner metatarsal tubercle elongate, five or six times size of round ill-defined outer metatarsal tubercle; foot with slight webbing between inner three toes; supernumerary tubercles few on soles; tips of toes expanded; toes lacking lateral fringes.

*Measurements* (mm) and proportions of holotype (KU 86873) and paratypes (KU 86870, 86871): Snout-vent length 39.6 (35.2, 32.3); length of tibia 21.6 (19.7, 18.6); head width 14.6 (14.5, 12.9); head length 16.3 (13.8, 13.1); tympanum diameter 3.6 (3.4, 3.0); eye length 5.0 (4.0, 3.6); width of pad of third finger 2.8 (2.1, 2.0). Ratios (in percent). Tibia length/snout-vent length 54.6 (55.7, 57.5); tympanum length/head width 24.9 (23.3, 22.8); tympanum length/eye length 72.5 (84.2, 83.2).

*Color*: Ground color gray with slight greenish cast; blotches darker brown, usually ill-defined except for interorbital triangle; venter cream-yellow; three labial bars on very light background. The bands on the limbs are dark brown.

*Variation:* Two paratypes (KU 86870-71) are available from the type-locality. They agree with the holotype in all features. Both are males and have a large round tympanum. The dorsal blotching varies as to intensity and extent in paratypes.

*Remarks:* Lynch (1965) in describing *E. bufonoides* suggested its closest relatives were *E. decoratus* and *E. hidalgoensis* Taylor. I have shown (1967) *E. hidalgoensis* to be a synonym of *E. decoratus*. *Eleutherodactylus bufonoides*, as presently understood, is more closely allied to *E. spatulatus* Smith as evidenced by its small tympanum and tarsal condition. Some doubt exists in my mind as to the status of *E. bufonoides* and it may well be that it is only a variation of the sympatric *E. spatulatus*.

These two new species are placed in the *decoratus* subgroup of the *alfredi* group (Lynch, 1966). The addition of these species to that subgroup does not expand the definition of the subgroup which now includes the following *E. decoratus* (2 subspecies), *E. guerreroensis* and *E. silvicola*. These species occur at low to moderate elevations on the eastern and southern periphery of the Mexican highlands.

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